

DOCUMENT RESUME

ED 483 037

EA 032 122

TITLE State-Funded Pre-Kindergarten: What the Evidence Shows.
INSTITUTION Department of Health and Human Services, Washington, DC.
PUB DATE 2003-12-00
NOTE 39p.
AVAILABLE FROM ED Pubs, P.O. Box 1398, Jessup, MD 20794-1398. Tel: 877-433-7827 (Toll Free). Web site: <http://www.ed.gov>.
PUB TYPE Reports - Evaluative (142)
EDRS PRICE EDRS Price MF01/PC02 Plus Postage.
DESCRIPTORS Educational Finance; Financial Needs; Resources; *State Aid

ABSTRACT

The goal of this report is to review evidence to determine the likelihood that states can meet the challenge of providing high quality, comprehensive early childhood education and whether states would be dedicated to this effort. It examines the role that states play in comprehensive early childhood education by reviewing: (1) states' level of support for pre-kindergarten programs, (2) the quality and effectiveness of state-funded pre-kindergarten, and (3) state efforts to build integrated, comprehensive early childhood systems for children from birth through age five that have a focus on school readiness. (Author)

STATE-FUNDED PRE-KINDERGARTEN

What the Evidence Shows



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**U.S. Department of
Health and Human Services**

December 2003

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Overview

The goal of this report is to review evidence to determine the likelihood that states can meet the challenge of providing high quality, comprehensive early childhood education and whether states would be dedicated to this effort. It examines the role that states play in comprehensive early childhood education by reviewing:

- 1) states' level of support for pre-kindergarten programs,
- 2) the quality and effectiveness of state-funded pre-kindergarten, and
- 3) state efforts to build integrated, comprehensive early childhood systems for children from birth through age five that have a focus on school readiness.

The evidence reviewed in this report shows that selected states are already major providers and funders of pre-kindergarten programs. Though there is great variation across states, most state-funded pre-kindergarten programs meet widely accepted and research-based quality standards, offer key expanded services to meet children's health and nutrition needs, and use a range of strategies to involve parents in their children's education. Existing research on the results of state-funded pre-kindergarten programs has technical limitations that constrain what can be known about the impact of state efforts on children's outcomes. In addition, the studies were not designed to answer some critical questions, such as whether state-funded pre-kindergarten programs produce better outcomes than other programs serving similar populations or whether they reduce or eliminate achievement gaps. Taking into account these caveats, there is promising evidence that states can implement programs that produce positive outcomes in areas that include cognition, language, and academic achievement, with some evidence of improved achievement test scores, reduced grade retention and increased school attendance in the elementary grades.

In addition, several states are funding large-scale initiatives to build early childhood systems that serve children from birth through age five. With the assistance of private foundations and state-level organizations, states are seeking and receiving some of the support needed to eliminate barriers to coordination and make even greater strides toward integrating pre-kindergarten, child care, Head Start and targeted programs, such as health, safety, and nutrition, into comprehensive early childhood systems. In developing their state-funded pre-kindergarten programs and early childhood systems, some states are using existing research, conducting new research, and building data systems to evaluate the results, design and operations of their programs, and make improvements in their approaches.

In conclusion, not all states currently have the capacity to undertake the administration of a coordinated and comprehensive early childhood education system that includes a strong evaluation component to measure results. However, the overall pattern of findings indicates that selected states appear ready to meet this challenge.

State-Funded Pre-Kindergarten: What the Evidence Shows

I. Introduction

Whether or not children will be successful students depends greatly on the quality of their experiences in early childhood. Research has demonstrated the value of providing comprehensive interventions for developing the knowledge and skills that prepare children for kindergarten and for closing the school achievement gap for economically disadvantaged students. In addition to health and social-emotional components, recent research has highlighted the need to include strong language, pre-reading, and pre-mathematics components. Head Start is the major federal program designed to promote the school readiness of poor children and to assist them in developing to their fullest potential. The cornerstone of the Head Start approach to promoting school readiness has been the provision of comprehensive services to address children's cognitive, social-emotional, health and safety needs while strengthening their families and supporting parents' participation in their children's education. With reauthorization in 1998, emphasis was placed on developing children's language and pre-reading skills.

When Head Start first began in 1965, very few states had experience with providing pre-kindergarten programs. Since then most states have begun to offer pre-kindergarten to meet children's educational needs, as well as provide health and other services to support school readiness. Before the recent passage of No Child Left Behind, which emphasizes greater state accountability for children's learning in K-12 education, many states recognized that raising levels of school achievement requires investments to improve the quality of children's preschool environments, especially for children from disadvantaged backgrounds. This report examines the role that states play in comprehensive early childhood education by reviewing:

- 1) states' level of support for pre-kindergarten programs,
- 2) the quality and effectiveness of state-funded pre-kindergarten, and
- 3) state efforts to build integrated, comprehensive early childhood systems for children from birth through age five that have a focus on school readiness.

A previous U.S. Department of Health and Human Services report summarized evidence showing the need to strengthen the language, pre-reading, and pre-mathematics skills of children in Head Start and to better coordinate early childhood programs in order to minimize redundancy, increase efficiency, and improve quality and access.¹ To address these issues, the Administration has proposed targeted enhancements to the Head Start program and has proposed giving a small number of qualified states the authority to coordinate pre-kindergarten and other early childhood programs and services with Head Start. The primary motivation for these proposals is to ensure that children in Head Start, as well as children in other early childhood settings, have the educational experiences they need to become school ready, while continuing to receive the comprehensive services that allow children to benefit from high quality learning experiences.

However, some questions have been raised about whether any of the states are prepared to offer high quality, comprehensive early childhood education and whether states would be sufficiently dedicated to such an effort. The evidence reviewed in this report addresses whether or not states are indeed ready to meet these challenges.

II. States are major providers of pre-kindergarten programs.

When Head Start was launched in 1965, few if any states had early childhood programs. Today up to 46 states and the District of Columbia provide funding for preschool.² Thirty-nine states and the District of Columbia have designed, implemented, and funded their own pre-kindergarten programs on a large-scale.³ Though eligibility requirements differ across states, most state-funded pre-kindergarten programs give enrollment priority to children whose families have low income, or who are otherwise at risk for poor school achievement.⁴

An increasingly large number of children are being served by state-funded pre-kindergarten programs. *Education Week* recently estimated that more than 750,000 three- and four-year-old children are served each year,⁵ coming close to the 850,000 served by Head Start.

State financial investments in these programs are substantial and have been increasing. States spend more than two billion dollars annually on pre-kindergarten.⁶ Even under current fiscal conditions most states are continuing to make pre-kindergarten programs a priority. In fact, one-third of Governors highlighted the importance of early education in their 2003 State of the State addresses.⁷

Though almost every state has pre-kindergarten, about a dozen states account for roughly 80% of the children served⁸ and ten states account for two-thirds of dollars spent.⁹

III. Some states have successfully offered pre-kindergarten programs.

According to a 2000-2001 survey conducted by the U.S. Department of Education's National Center for Education Statistics (NCES), many publicly funded pre-kindergarten programs offered to children in public schools have qualified teachers, provide access to meals, transportation, and extended day care, and have appropriate class sizes.¹⁰ Specifically, 86% of pre-kindergarten teachers in publicly funded programs had baccalaureate degrees.¹¹ Seventy-nine percent of schools with pre-kindergarten classes had transportation services, 74% provided meals and 18% offered extended day care. The average number of children per class was 17 (20 is the maximum recommended class size, with a recommended child to adult ratio of 1 to 10).¹² In addition, of the children served, 61% were from families with low income. Thirty-two percent of the classes were full day. The survey included programs that were funded with federal, state, or local dollars or with some combination of public funds; 80% of the programs surveyed were funded with state and/or local dollars. It also included programs devoted exclusively to providing special education services.

The NCES report indicates that, overall, public investments in pre-kindergarten are being used to offer programs that have characteristics associated with quality¹³, that programs are beginning to recognize the needs of working parents, and that public pre-kindergarten includes economically disadvantaged children who are at risk for poor school achievement. However, the primary goal of this report is to examine programs that are primarily funded, implemented and administered by the states, and that go beyond providing special education programs to offer broader early education and extended services to children at risk for poor school outcomes. A compilation of data across reports shows that many of these state-funded pre-kindergarten programs meet key indicators of quality.

A. Many state-funded pre-kindergarten programs meet key indicators of quality.

A nationwide survey conducted by researchers at Yale University that focused exclusively on state-funded preschool programs finds that states can implement good, comprehensive pre-kindergarten programming, and some states are already doing a good job of promoting school readiness.¹⁴ In the survey, states reported on characteristics of their programs, such as teacher-child ratios, class size, teacher qualifications, and parent involvement. These characteristics are widely recognized as indicators of high quality and research has shown them to be associated with positive child outcomes.¹⁵ States also reported on their curriculum standards and comprehensive services in the eight areas mandated by Head Start: nutritious meals, vision and hearing tests, immunization, mental health services referrals, physical health services referrals, dental services referrals, family caseworkers, and home-visits. Survey data were obtained by mail and a telephone update from state-level program administrators. Data were collected initially in 1996¹⁶ and updated in 2000.¹⁷

Results show:

- Thirty-three states funded state preschool initiatives, showing broad interest in and dedication to funding early childhood education programs.¹⁸
- 77% of the 33 state-funded programs **met or bettered the 1:10 teacher-child ratio** for four-year-olds required by Head Start and recommended by the National Association for the Education of Young Children (NAEYC).
- 78% of the 33 states **mandated that programs serve 20 or fewer children per classroom**, consistent with NAEYC recommendations and Head Start Performance Standards for class size.
- **Qualifications for teachers in state-funded pre-kindergarten programs were generally more stringent than for Head Start.** Fifty-five percent of the 33 states required a bachelor's degree, most often specific to early childhood education and development. Head Start has not required a bachelor's degree, although the Congress is currently considering this requirement. The Head Start Amendments of 1998 (42 USC 9831) require that, by September 30, 2003, at least 50 percent of all Head Start teachers nationwide in center-based programs have an AA, BA, or higher degree in early childhood education (ECE), or, if the degree is in a related field, experience teaching preschool children. The 2001-2002 Program Information Report (PIR) verifies that this requirement was met by 2002. Thirty percent of lead teachers were reported as having an ECE-related BA or graduate degree, and another 22 percent were enrolled in an ECE-related degree program.¹⁹
- Half of the 33 state-funded programs **already mandate five of the eight Head Start comprehensive service areas** (nutritious meals, vision and hearing tests, immunization, mental health services referrals, and physical health services referrals), and in addition report having English as a Second Language services that are as comprehensive as Head Start.

- **61% of the 33 states require or encourage parental involvement**, with 35% requiring parent involvement in program governance or implementation and 26% having mechanisms that encourage parent involvement. Three states already adhere to Head Start Performance Standards in this area.
- **Half of the 33 state-funded pre-kindergarten programs already require or request that program providers adhere to nationally accepted guidelines for quality early childhood care and education, such as the NAEYC guidelines or the Head Start Program Performance Standards.**

While not all states with pre-kindergarten programs are prepared to offer high quality early childhood education and services, the data show that most state-funded pre-kindergarten programs have characteristics that research has linked to positive child outcomes. Moreover, many state-funded pre-kindergarten programs have standards that generally meet or exceed Head Start standards, though there is limited information on whether states monitor adherence to the standards and procedures used to monitor programs.

Recent reports from Education Week²⁰, the American Federation of Teachers²¹, and the Education Commission of the States²² present data that show a similar picture of state-funded pre-kindergarten programs. For each report, information was collected on several key indicators of program quality. The particular data collected and the methods used varied somewhat across sources. However, all involved gathering information from a state administrator, such as an early childhood specialist, who had knowledge of the program and who was given an opportunity to update the information and correct errors prior to the data being published. Compiling data across these three sources, Table 1 shows states with pre-kindergarten programs that meet at least four of six widely accepted and research-based indicators of quality. (States that provide funding exclusively through supplements to Head Start were not included.) Data were compiled across the three sources in order to obtain the most recent information available across the six indicators. However, pre-kindergarten programs are continually evolving, and thus the overall pattern of findings is more relevant than the data for any particular state program.

Table 1. State-Funded Pre-Kindergarten Programs that Meet at Least Four of Six Quality Indicators: A Compilation Across Reports

State	Teacher-child ratio (1:10 or better) ¹	Class Size (20 or better) ²	Teacher Qualifications (AA or better) ³	Expanded Services ⁴	Parent Involvement ⁵	School Readiness Standards ⁶
Alabama	✓	✓	BA	✓		✓
Arkansas	✓	✓	BA(ECE)	✓	✓	✓
California	✓			✓	✓	✓
Colorado	✓	✓			✓	✓
Connecticut	✓	✓			✓	✓
Delaware	✓	✓		✓	✓	✓ ⁹
Florida	✓	✓	BA ⁸	✓	✓	✓
Georgia	✓	✓	AA(ECE)	✓	✓	✓
Illinois	✓	✓	BA (ECE)		✓	✓
Iowa	✓	✓	BA(ECE) ⁸	✓	✓	
Kentucky	✓	✓	BA (birth-K cert.)	✓	✓	Under Development
Louisiana	✓	✓	BA(ECE)			Under Development
Maryland	✓	✓	BA (ECE)	✓	✓	✓
Massachusetts	✓	✓	BA ⁸		✓	✓
Michigan	✓	✓	BA ⁸	✓	✓	✓
Minnesota	✓	✓	BA ⁸	✓	✓	✓
Missouri	✓	✓	BA(ECE) ⁸	✓		✓
Nebraska	✓	✓	BA(ECE)	✓	✓	
New Jersey	✓	✓ ⁷	BA ⁸	✓		✓
New York	✓	✓	BA	✓	✓	✓
North Carolina	✓	✓		✓		✓ ¹⁰
Ohio	✓	✓	BA(ECE)	✓	✓	✓
Oklahoma	✓	✓	BA (ECE)	✓	✓	✓
Oregon	✓	✓	BA(ECE) ⁸	✓	✓	✓
Rhode Island	✓		BA (ECE)		✓	✓
South Carolina	✓	✓	BA (ECE)	✓	✓	✓
Tennessee	✓	✓	BA (ECE)	✓	✓	✓
Vermont	✓	✓	BA(ECE) ⁸	✓	✓	✓
Virginia	✓	✓	BA(ECE) ⁸		✓	Under Development
Washington	✓	✓	BA(ECE)	✓	✓	✓
Wisconsin	✓	✓	BA (ECE)	✓		✓

Notes. AA (Associates Degree), BA (Bachelor's Degree), ECE (Early Childhood Education)
See extensive Table notes in Appendix A.

B. Some states have used research to design, evaluate, and improve state-funded pre-kindergarten.

Surveys show that most state-funded pre-kindergarten programs have standards that demonstrate the state's plan to offer high quality programs that result in positive outcomes for children. Rigorously documenting the actual results of investments in pre-kindergarten programs is another essential part of program improvement and accountability. States dedicated to offering high quality pre-kindergarten programs are beginning to use a range of research methods to motivate and inform the development of new initiatives and to evaluate program outcomes. Limitations in the methods that have been used to study the effectiveness of state-funded pre-kindergarten programs and track the progress of children who attend state-funded pre-kindergarten programs constrain what can be known about the impact of state efforts on children's outcomes. However, the data that are available suggest that some states offer programs that are likely to promote children's school readiness.

1. States use the evidence from randomized experiments to build their initiatives.

The randomized experiment is the strongest research design for determining if a program causes the desired effects. Randomly assigning children either to a group that attends the target program or to a group that does not attend is necessary for knowing whether the program, as opposed to other factors, caused the measured outcomes. As yet, there are no randomized experiments that have been conducted within states to determine whether state-funded pre-kindergarten programs cause positive results for children, including in the area of school readiness. This will be an important next step for states to take in their research.

States are increasingly recognizing the importance of randomized experiments in demonstrating the effectiveness of early childhood interventions and are using the results of widely-known and highly regarded randomized studies of early childhood programs and interventions (e.g., the Abecedarian Project, the Perry Preschool Study²³) to motivate and inform their efforts to develop pre-kindergarten programs and school readiness initiatives. For example,

- “High-quality preschool programs have been shown to dramatically raise children’s abilities at school entry, increase early and later achievement test scores, reduce grade repetition and placement in special education, and boost graduation rates. Some of the strongest evidence of long-term benefits is provided by the three longitudinal studies---the High/Scope Perry Preschool study, the Abecedarian study, and the Chicago Child-Parent Center²⁴ study.” *From Abbott Preschool Program Implementation Guidelines, Office of Early Childhood Education, New Jersey Department of Education, February 2003*²⁵
- “Most districts surveyed are convinced that Universal PreKindergarten for New York’s four-year-olds provides an excellent start to the formal education of children. Many believe that this early learning enhances children’s capacity to learn, including improving later elementary school performance. This view is consistent with recent early brain research findings including the just published study from the University of North Carolina/University of Alabama Abecedarian Project. That research demonstrates the long-term, positive impact of quality early education on young children. These same learning activities are incorporated in New York’s Universal PreKindergarten guidelines.” *From Universal PreKindergarten Takes Off in New York State, New York State Department of Education, February 2002*²⁶

- “Reading ability, cognitive skills, and college enrollment were among the gains documented in the landmark Abecedarian study, which compared progress of low-income children from a high-quality preschool with that of children who had not attended. Other positive effects included fewer instances of grade retention, decreased need for special education, and delayed parenthood.” *From Ready, Set, Grow: A Framework for Universal Access to Quality Preschool in Illinois, Office of the Governor*²⁷

2. Quasi-experiments show that states can implement successful pre-kindergarten programs.

A well-designed quasi-experiment is an alternative to the randomized experiment when randomly assigning children to different groups may not be practical. In a quasi-experiment, the performance of children who attended the target program is compared to the performance of one or more groups of children who did not attend. The most rigorous quasi-experiments use procedures to ensure that the target group and the comparison groups are as comparable as possible on the range of factors that are known to affect the desired outcomes. For example, level of maternal education is known to affect children’s school readiness; thus procedures should be used to ensure that target and comparison groups have equivalent maternal education levels to rule out the possibility that observed differences in children’s performance are attributable to differences in maternal education. The more rigorous quasi-experiments also measure children’s initial levels of performance prior to the intervention.

a. A recent report of 10 state evaluations shows promising results for state-funded pre-kindergarten.

As of 1998, 10 states had used quasi-experimental designs to evaluate their pre-kindergarten programs. These designs varied in rigor, but each design compared outcomes for children who attended state-funded pre-kindergarten with one or more comparison groups of children that did not attend the program.²⁸ Not only did study designs vary, but also programs varied in terms of requirements, eligibility and other characteristics. The 10 states include: Florida, Georgia, Kentucky, Maryland, Michigan, New York, South Carolina, Texas, Washington, and the District of Columbia.²⁹ Most of the evaluations focused on cognition, language and academic achievement, with a few including measures of social, behavioral, and health outcomes.

According to recently published technical analyses of these 10 evaluations by Yale University researchers Gilliam and Zigler,³⁰ state programs produced either consistently positive results or positive results in some areas of competency and no effects in others. For some areas of competency positive results were often found consistently for all cohorts of children studied.³¹ Though research designs do not allow for direct comparisons between state-funded pre-kindergarten programs and Head Start, effect sizes for these quasi-experimental studies of state-funded preschool programs were similar to those reported in quasi-experimental studies of Head Start.³² (See Gilliam & Zigler, 2001, for more detail on the duration of each study, the number of cohorts studied and the proportion of cohorts with positive outcomes, inclusion of pre-tests, composition of comparison groups, sample sizes, measures, and other aspects of the study designs.)

Key findings from quasi-experiments of state-funded pre-kindergarten

Across the 10 states, the child outcomes measured included cognitive and language abilities, reading and mathematics achievement, behavior problems, child health, attendance, grades, special education referrals and placements, parent involvement and grade retention. Not all states measured outcomes in each of these areas.³³ Many tests of children's abilities were well-known and technically sound standardized measures, while others were relatively unknown "home-grown" measures with little information on technical soundness. On balance, the report finds good evidence that states can develop and implement effective pre-kindergarten programs, with children who attended state-funded pre-kindergarten programs having higher scores in several areas compared to children who did not attend the programs. Results were especially consistent for developmental competence, including cognition and language, at the end of preschool and in kindergarten, as well as for academic achievement, reduced grade retention and school attendance in elementary school.

- **Cognitive and language outcomes** were measured in nine states (Florida, Georgia, Kentucky, Maryland, Michigan, New York, South Carolina, Washington, and the District of Columbia). Four of these states (Florida, Kentucky, New York and Washington) measured outcomes at the end of preschool. All four states found consistently across all cohorts studied that children who attended state-funded pre-kindergarten had higher scores on assessments of cognitive and language abilities compared to children who did not attend state-funded pre-kindergarten.

Six states measured cognitive and language outcomes in kindergarten. Three of the states (Florida, Maryland, Michigan) found that scores were higher for children who had attended pre-kindergarten across all cohorts studied. Three states (Kentucky, New York, and the District of Columbia) showed mixed outcomes, with some of the cohorts of children who attended pre-kindergarten showing significantly higher scores, and some not.

Three of the states measured cognitive and language outcomes both at the end of preschool and in kindergarten (Florida, Kentucky, New York). Florida found that, for all cohorts studied, children who attended pre-kindergarten had significantly higher scores at both time points. In Kentucky and New York, all cohorts of children who attended pre-kindergarten had higher cognitive and language scores at the end of preschool, with some cohorts having higher scores into kindergarten.

South Carolina and Georgia measured cognitive and language outcomes only for 1st graders. South Carolina found that children who attended state-funded pre-kindergarten had higher scores on cognitive and language assessments; however, Georgia did not.

Kentucky followed children until 2nd grade and New York followed children until 3rd grade. In both states and for all of the cohorts of children followed, those children who attended pre-kindergarten had higher scores on cognitive and language assessments at the end of preschool and kindergarten. However, by the time they were in 2nd and 3rd grades, the scores of children who attended pre-kindergarten were similar to the scores of children who did not attend pre-kindergarten.

- To assess longer-term outcomes, children's performance on **school-administered reading and mathematics achievement tests** was examined in seven states (Florida, Georgia, Maryland, New York, South Carolina, Texas, and the District of Columbia). All of the states, with the exception of the District of Columbia, reported that children who attended state-funded pre-kindergarten had higher scores on achievement tests at one or more grades.

Florida was the only state to administer achievement tests in kindergarten and to administer the tests every year through the 4th grade. For all cohorts studied, children who attended state-funded pre-kindergarten had higher test scores in kindergarten compared to children who did not attend state-funded pre-kindergarten; however, their scores were similar in grades 1 through 4.

Maryland, Texas, and the District of Columbia tested only 3rd graders: Maryland and Texas found that all cohorts studied had significantly higher scores on achievement tests if they attended pre-kindergarten. Scores were not higher for children who attended pre-kindergarten in the District of Columbia.

Georgia tested children at 1st grade and New York tested children at 3rd grade: In both states some cohorts of children who attended pre-kindergarten had higher achievement test scores. In South Carolina, children who attended pre-kindergarten had higher scores on achievement tests in the 1st grade, but not in the 2nd and 3rd grades.

- **Behavior** problems were assessed in three states. Florida assessed behavior problems only at the 4th grade and found significantly fewer behavior problems for children who attended pre-kindergarten. Kentucky assessed behavior problems every year from the end of preschool through the 4th grade. Some cohorts of children who attended pre-kindergarten had fewer behavior problems at the end of preschool, but not in kindergarten and the later grades. Washington tested for behavior problems in 1st through 3rd grade, but no differences were found between children who attended pre-kindergarten and children who did not.
- Washington was the only state that measured **child health**. Health assessments were conducted in 1st through 3rd grade, with no significant outcomes found.
- All states that evaluated **attendance** in kindergarten and the early grades found for at least one cohort that school attendance was better for children who participated in state-funded pre-kindergarten compared to children who did not.
- Six states assessed **grade retention** beginning at kindergarten, (Florida, Georgia, Maryland, New York, South Carolina and Texas), although data were not collected for every grade in every state. For all cohorts studied, grade retention was significantly lower in at least one of the years from kindergarten through 3rd grade for children who attended pre-kindergarten. However, no state found that grade retention for children who attended state-funded pre-kindergarten was lower every year from kindergarten through 3rd grade, and no state found that grade retention was lower by the time these children were in 4th grade.

- For the states that measured **grades, special education referrals/placements, and parent involvement**, there were either no significant outcomes or few consistently positive findings.
- All but one state gathered data on children's social, motor, academic, literacy, and self-help skills as well as the cognitive and language skills described earlier. Not every state collected information for each skill area, and across states the information was collected at different times from the end of pre-kindergarten through 4th grade. The pattern of results across all of these skill areas showed that children who attended state-funded pre-kindergarten had higher scores than children who did not attend state-funded pre-kindergarten, and the report concludes that, overall, these score differences were "sizable and robust".³⁴ Moreover, "in all state evaluations nontrivial positive outcomes were sustained to kindergarten for at least one cohort."³⁵

Overall, the report finds that these state-funded pre-kindergarten programs had positive outcomes at the end of pre-kindergarten. Longer-term outcomes were evident in kindergarten and first grade, though they were found less consistently.³⁶ Though some early positive outcomes persisted into elementary school, there was less success in sustaining early positive outcomes through the early grades. This "fade-out" of early outcomes is not unique to studies of state-funded pre-kindergarten. Similar results have been reported in other studies of early childhood interventions, including Head Start. Fade-out effects may be the result of problems with study methods or inadequate instruction in kindergarten and the early grades, or both. The trend has been found consistently across studies that included different types of early childhood interventions, outcome measures, and study designs. This pattern of results strongly suggests that attending high quality schools after pre-kindergarten and perhaps follow-on interventions and services are needed to sustain the immediate positive benefits of pre-kindergarten programs.

Conclusion

Considering the pattern of findings together with their limitations (which are discussed in more detail in Section "c"), it can be said that the positive results for state-funded preschool programs are "encouraging."³⁷ The effect sizes and patterns obtained from these studies were similar to those that have been found for other large-scale preschool programs for low-income children, including Head Start.³⁸ States vary greatly on nearly every component of their pre-kindergarten programs, and "not every state has the will and infrastructure necessary to implement, maintain, and evaluate the success of a comprehensive child and family program such as Head Start."³⁹ Yet, the evidence suggests that "states can implement good, comprehensive pre-kindergarten programming, and on an individual basis some states appear to be doing a good job of promoting school readiness."⁴⁰

b. A more recent quasi-experiment shows that children in Georgia's pre-kindergarten program make progress in school readiness.

Since the 10-state study review, a more recent quasi-experimental evaluation of Georgia's pre-kindergarten was released. The primary goal of the study was to examine the effect that the Georgia pre-kindergarten program has on children's cognitive, language, pre-reading, and pre-mathematics skills, social-emotional development and physical health. The study also examined the progress of children who attended Georgia Head Start and Georgia private preschools.⁴¹

The Georgia Pre-kindergarten program was established in 1993 and is funded by the state lottery. The program requires a 1:10 teacher-child ratio and a classroom size of 20 or fewer children. The program has school readiness standards, mechanisms for parent involvement, and offers extended services. The program began as a means-tested program, but in 1995 was made available to all four-year-olds whose parents chose to enroll them.

The study examined the progress of a representative sample of all children in the program, and also looked in-depth at a sub-sample of children in Georgia pre-kindergarten with disadvantages similar to those experienced by children in Georgia Head Start. The characteristics of classrooms and teachers were examined for all three Georgia programs (Georgia state pre-kindergarten, Georgia Head Start and private preschool), as well as how these characteristics related to children's scores on school readiness assessments. The evaluation of the effectiveness of Georgia's state pre-kindergarten includes a quasi-experimental design that in some ways can be considered more advanced than those used in previous evaluations:

- The study design takes into account that children's development is a complex process that is influenced by factors other than preschool, including experiences at home and characteristics of individual children and families. Data were collected on a range of child and family characteristics and used in most of the statistical analyses to control for their influence on children's outcomes.
- Child outcomes were collected from a variety of sources that included: 1) widely used and standardized direct assessments of children's abilities that were administered by trained professionals and allowed comparisons to national norms, 2) direct assessments administered by trained professionals that have been used in other large-scale studies of early childhood programs, including Head Start, and 3) teacher ratings of children's development and school readiness, and parent surveys.⁴²
- Other technical merits of the analysis included the collection of baseline data for children at the beginning of preschool, allowing changes in children's abilities to be measured from the beginning of preschool until the beginning of kindergarten; the use of growth-curve analyses to identify the developmental trajectories for children who attended Georgia's pre-kindergarten program, as well as for children in the two other groups; and the use of technically sound measures of process quality.⁴³
- However, there are still methodological limits to the study and definitive causal statements about the effectiveness of the pre-kindergarten program relative to other programs cannot be made. Differences in children's outcomes may be due to differences in the effectiveness of the programs or to unmeasured differences in children's background and entry skills that were not controlled in the analyses.

Findings for the Overall Program

- On average, children enrolled in Georgia pre-kindergarten came from families with wide ranges of economic resources, parental education, involvement with children and schools, and family structures. Children in Head Start were from homes and families with the greatest disadvantages, and children in private preschools were the least disadvantaged. Some Georgia pre-kindergarten children resembled children in Head Start, while others were similar to children in private schools.
- Teachers in Georgia pre-kindergarten had significantly higher education levels than teachers in Georgia Head Start or private preschools. Fifty-four percent of Georgia pre-kindergarten teachers had bachelor's degrees compared to 13% in Georgia Head Start and 20% in private preschools. In Georgia pre-kindergarten, 13% of teachers had less than an associate's degree compared to 70% in Georgia Head Start and 75% in private preschools. Teachers in Georgia pre-kindergarten as well as Head Start offered classroom experiences that were of significantly better quality than private preschools, and Georgia pre-kindergarten teachers offered these most consistently across classrooms.
- Process measures of program quality showed that for all three programs--Georgia pre-kindergarten, Head Start and private preschools-- higher quality preschool experiences were associated with significantly higher scores on: receptive vocabulary, problem-solving/pre-mathematics, story comprehension and print familiarity, and mastery of basic skills (color knowledge, counting, and number recognition).⁴⁴ Letter-word recognition scores were not associated with program quality. These results were maintained after controlling for the influence of child and family characteristics. Because these data are correlational, it cannot be determined whether program quality had a causal influence on children's test scores.⁴⁵
- During the preschool year (from fall entry to spring exit), children in Georgia pre-kindergarten made significant gains in: vocabulary, letter-word recognition and expressive language, and mastery of basic skills (knowing colors, counting, and number recognition). Gains were not made in problem-solving/pre-mathematics, story comprehension or print familiarity.

Findings for Disadvantaged Children

The study authors explain that because most children in Georgia have some type of preschool experience, it was not practical to compare children in Georgia's pre-kindergarten to a group of children without preschool experience in order to assess program effectiveness. Therefore, the evaluation compared children in Georgia's pre-kindergarten program to children in Georgia Head Start and private preschool to attempt to determine the contribution that Georgia pre-kindergarten makes to children's progress. However, children in Georgia's pre-kindergarten program differed significantly from children who attended Head Start.⁴⁶ When study groups differ greatly, "self-selection" bias prevents knowing for sure if an intervention caused the observed result or if one intervention produces better outcomes than another.⁴⁷ Given differences between the characteristics of children in Georgia pre-kindergarten and Head Start, the evaluation included a sub-study to examine how the progress of the most disadvantaged children attending Georgia pre-kindergarten compared with the progress of a similarly disadvantaged group of children in Head Start. The sub-study used matching procedures and advanced statistical techniques to control as much as possible for self-selection bias.⁴⁸

These procedures resulted in groups that were similar on many, but not all characteristics. Demographics were similar with the exception that disadvantaged children in Georgia pre-kindergarten had mothers with significantly higher levels of education, which is known to impact children's cognitive performance. The children in the sub-study sample attending pre-kindergarten scored significantly higher on two of six measures (vocabulary and basic skills) upon entering the program than the children attending Head Start.

Sub-study of disadvantaged children: Results for the preschool year⁴⁹

- Disadvantaged children who attended the Georgia pre-kindergarten appeared to make gains over the preschool year on many aspects of school readiness, including letter-word recognition, story comprehension and print familiarity, receptive vocabulary, and expressive language. Statistical tests have not been conducted to determine if these gains were statistically significant.
- Disadvantaged children in Georgia pre-kindergarten began the preschool year with significantly higher scores on two of the six measures assessed than those entering Head Start. They scored higher in receptive vocabulary and mastery of basic skills. By the end of the preschool year, the difference remained for vocabulary but not for mastery of basic skills. There were additional differences showing that by the end of the year children in Georgia pre-kindergarten had higher scores on letter-word recognition, story comprehension and print familiarity, and expressive language. There were no differences in problem-solving/pre-mathematics scores. These analyses did not control for differences in child and family characteristics between the Georgia pre-kindergarten and Head Start groups.

Sub-study of disadvantaged children: Results at kindergarten entry

As of kindergarten entry, the pattern of outcomes showed similar results:

- From preschool entry to kindergarten entry, disadvantaged children in Georgia pre-kindergarten made significant gains in vocabulary, letter-word recognition, story comprehension and print familiarity, problem-solving/pre-mathematics and mastery of basic skills. Compared to children in Georgia pre-kindergarten, gains for children in Head Start were significantly greater for vocabulary. The two groups showed similar gains in all of the other areas.
- By the beginning of kindergarten, disadvantaged children in Georgia pre-kindergarten scored significantly higher than children in Head Start in vocabulary, letter-word recognition, story comprehension and print familiarity, problem-solving/pre-mathematics and mastery of basic skills. Kindergarten teachers' ratings of school readiness, academic skills and behavior showed similar differences. Teacher ratings for health and physical well-being were similar for children in Georgia pre-kindergarten and children in Head Start.
- Score differences on direct assessments and teacher ratings at kindergarten entry could be the result of differences in the effectiveness of programs, differences in child and family characteristics, or differences in children's experiences over the summer.

In conclusion, based on these results, the evidence suggests that the Georgia pre-kindergarten program is likely to be providing experiences that help disadvantaged children get ready for school.

c. Enhancements are needed in future evaluations of state-funded pre-kindergarten.

This recent study of Georgia pre-kindergarten and the 10-study review by Gilliam and Zigler are the best data available on how state-funded pre-kindergarten programs affect children's outcomes. However, the amount, type, and quality of the data limit what we can know about the effectiveness of state-funded pre-kindergarten programs.⁵⁰ (Most of these limitations also apply to existing studies of Head Start, though a randomized study of Head Start impacts is underway.) To ensure that data from future evaluations are useful, areas that need particular attention include, but are not limited to, the following:

- Though the authorizing state legislation for many pre-kindergarten programs requires a formal evaluation of program implementation and effectiveness, less than half of state-funded preschool programs have or are currently conducting studies that can adequately test program results. More evaluations of state-funded pre-kindergarten programs are needed to document program results and to identify areas of program strength and areas for program improvement.
- None of the studies that have been conducted or that are currently underway use randomized designs. More randomized experiments are needed to assess the causal impact of state-funded pre-kindergarten programs. As explained earlier, randomly assigning children to attend state-funded pre-kindergarten is the only way to know for sure if the program, as opposed to other factors, is responsible for any observed results.
- When randomized experiments are not feasible, quasi-experiments should include well-matched and well-defined control groups that allow for stronger inferences about the effect of programs on child outcomes. Even the most rigorous quasi-experiments cannot completely guard against the possibility that unmeasured differences between children who attended the program and children who did not are responsible either in full or in part for study findings. However, quasi-experiments should, at a minimum, assess children's abilities at program entry and examine the similarities and differences in the background characteristics of children and families for both the pre-kindergarten and comparison groups that could affect the child outcomes that are measured.
- To have confidence in the results, the measures used to assess children's level of performance and longer-term progress should be technically sound and appropriate for the population studied.
- Statistical analyses should be conducted properly (for example, statistical corrections should be made to correct for significant outcomes that may be obtained by chance due to the large number of significance tests conducted). In addition, the statistical and educational meaningfulness of the sizes of effects should be reported along with results from tests of statistical significance.
- Better strategies are needed for computing grade retention, special education referrals, and similar variables.
- Attrition occurs in every long-term study, but it is important to know how children who stayed in the study differed from children who did not and to ensure that the groups of children who remain

in the study have the characteristics for which they were originally chosen (such as equivalent income or maternal education levels). Study procedures or statistical analyses should be used to control for attrition patterns that could bias the results, and these approaches should be described in evaluation reports.

- The procedures for selecting samples often are not reported or are not reported in sufficient detail. Often it is unclear whether the study samples are representative of children attending pre-kindergarten in the state.
- The studies typically do not break down results for children by their demographic characteristics such as ethnicity, gender and income. More in-depth analyses of study subgroups are needed to determine which children benefit from the program and which do not.

There are several key issues of concern to policy makers that need to be considered when designing future research. Existing studies have design limitations. For example:

- As with existing Head Start research, research design limitations prevent knowing definitively whether the state-funded pre-kindergarten programs caused the positive effects observed on children's performance. As mentioned earlier, children must be randomly assigned to the state program or to a comparison group to know for sure that the program caused positive effects, or quasi-experimental studies should have comparison groups that allow for making strong inferences about the causal effects of pre-kindergarten program.
- Studies of state-funded pre-kindergarten programs cannot directly address whether state-funded pre-kindergarten programs produce effects that are better or worse than Head Start because none of the studies included a sample of Head Start children as a comparison group. In fact, no studies have been designed to rigorously and directly compare the effectiveness of state-funded pre-kindergarten initiatives to the effectiveness of Head Start.
- Information on the amount of progress children make during the preschool year usually is not available because children typically were not tested before entering pre-kindergarten and again at the end of pre-kindergarten.
- Studies typically do not address whether the state-funded pre-kindergarten programs narrowed the achievement gap for disadvantaged populations. Reports usually do not compare the performance of disadvantaged children who attended the program with other disadvantaged children who did not attend the program or with a sample of more advantaged children. Children's performance is rarely compared to national norms.
- Most states did not measure the full range of knowledge and skills that early childhood programs need to target in order to promote children's school readiness. This restricted range of measurement limits what can be known about each state's profile of strengths and weaknesses in promoting school readiness and early school achievement. Because outcome measures varied across studies, strengths and weaknesses cannot be compared across state-funded pre-kindergarten programs.

- The evaluations did not include implementation studies or process measures to determine how each component of the program was implemented and the degree to which full implementation was achieved. As a result, the studies cannot show which components of the programs contributed to positive outcomes.

In conclusion, existing research on the results of state-funded pre-kindergarten programs has technical limitations that constrain what can be known about the impact of state-funded pre-kindergarten programs on children's outcomes. In addition, the studies were not designed to answer some critical questions, such as whether state-funded pre-kindergarten programs produce better outcomes than other programs serving similar populations or whether they reduce or eliminate achievement gaps. Taking these caveats into consideration, for some states there is promising evidence that they can implement pre-kindergarten programs that produce positive outcomes in areas that include cognition, language, and academic achievement, with some positive outcomes, such as improved achievement test scores, reduced grade retention and school attendance, in the elementary grades.

3. States are beginning to invest in tracking the performance of children in pre-kindergarten.

Reports describing the performance of children who attend state-funded pre-kindergarten are available from several states. Unlike randomized experiments or quasi-experiments, these studies do not have designs that are appropriate for comparing outcomes for children who attend state-funded pre-kindergarten with other children. Instead, the purpose is to follow the progress of one or more cohorts of children who have attended the state-funded pre-kindergarten program. Connecticut is an example of a state that has reported on the progress of children, as well as on teachers and classrooms.⁵¹ The Connecticut School Readiness Initiative (CSRI), a partnership between the State Departments of Education and Social Services, seeks to increase the availability of high quality full-day, full-year child care programs for low-income families and to help bridge the school readiness gap between urban students (primarily minority) and their more affluent suburban peers. The initiative primarily targets low-income three to five-year-olds and provides funding for up to two years of services. Local school readiness councils allocate funding to individual programs.

One local descriptive study of classroom quality in South Central Connecticut was used in part to target quality improvement funds. The results showed that between 1997 and 2000, there was significant improvement in classroom quality, with the number of classrooms rated excellent tripling and the percentage of classrooms rated inadequate to minimal dropping from 50% to 8%.⁵²

To evaluate the state's school readiness initiative more broadly, Connecticut is following two groups of children who attended the state-funded pre-kindergarten across the state in 1998 and 1999.⁵³ The study assessed pre-kindergarten classroom quality and teacher interactions using standardized and technically sound observations of classrooms. However, the study did not measure the presence of specific interactions known to promote language, pre-reading, and pre-mathematics knowledge and skills. Children's social skills and very basic school readiness skills were measured using mostly technically sound observations and direct assessments of school readiness.

Results showed that:

- all classrooms offered care of either minimal or good quality, with 58% being rated as good or better and 2% rated excellent.
- teacher sensitivity and responsiveness to children's needs and interests were above average and teachers were neither harsh toward nor detached from children in their care.
- school readiness skills at the end of pre-kindergarten were close to national norms and the amount of change from fall to spring for children who attended pre-kindergarten in 1999-2000 was the same as national norms.⁵⁴
- teachers also reported social skills and behavior problems that were similar to national norms.⁵⁵

Other states, such as Delaware, Georgia, Maryland, and Illinois, have collected data that include but are not limited to: children's performance on state-wide achievement tests, grades, grade promotion and retention, behavior problems, special education referrals and enrollment, teacher ratings of children's readiness for kindergarten and readiness for each elementary school grade, and teachers' perceptions of which types of early childhood experiences (e.g., Head Start, pre-K, home care, child care) best prepare children for school. Some states have collected teachers' classroom observations and compiled portfolios of children's accomplishments to gauge and exemplify children's progress. In addition to measuring children's performance, a few states track the quality of classrooms and teachers.⁵⁶

Enhancements are needed in future efforts to track children's performance.

Collecting data on the children who attend state-funded pre-kindergarten programs and documenting how children from diverse early childhood settings perform in school are useful for planning new initiatives and improving existing ones. However, it is important to be aware of the technical limitations of the data that need to be addressed in future efforts to track children's performance and the types of questions that this type of study design cannot answer. For example:

- Inferences about the effectiveness of state-funded pre-kindergarten should not be made using studies that track the performance of children who attended the programs. Likewise, studies tracking the performance of children from different early childhood settings, such as state-funded pre-kindergarten, center-based child care, home care, or Head Start, should not be used to infer that one early childhood setting produced better outcomes than the other. These inferences can be made only if rigorous quasi-experiments or randomized experimental designs are used to rule out other factors that are also known to affect children's school readiness and school achievement and that may cause children from different early childhood settings to perform differently in school.
- Most studies that track children's progress have the technical limitations mentioned earlier for existing evaluation studies that reduce the usefulness of their results. These limitations should be remedied in future studies.
- One of the most important limitations of existing studies is the selection of measures. Measures were often newly created or existing measures were modified for a particular study, with no

evidence available about their technical soundness. In future studies, new and modified measures should be developed following procedures that allow for fully documenting technical soundness. In addition, measures are often used inappropriately because they were developed for another purpose. For example, “classroom-based” assessments developed for teachers to observe each child’s progress and tailor instruction are often used to track the progress of large groups of children or to make group comparisons. Yet, classroom-based assessments do not have technical properties that allow them to be used for these purposes. Future studies should include measures other than classroom-based assessments that are appropriate for tracking the performance of large groups of children, and making comparisons across groups and to national and state averages.

IV. Some states are making advances in building early childhood systems.

With heightened accountability for K-12 student achievement, states have become increasingly interested in developing comprehensive and integrated early childhood systems, with most serving ages birth through five. According to a recent in-depth review of the experiences of three states – Georgia, Massachusetts, and Ohio – in developing a major early childhood initiative, there are several key challenges to overcome in building a coordinated early childhood system. These include: (1) developing a comprehensive vision that includes school readiness, (2) merging funding streams while addressing their regulatory differences, (3) coordinating delivery systems with components that have separate administrators, missions and programs, and (4) tracking progress and measuring the results.⁵⁷

Few supports are available to help states meet the challenges of developing coordinated approaches to early childhood education. However, states are seeking mechanisms that will support their efforts to build more coordinated and effective early childhood systems. Several new approaches have emerged that show states’ dedication to moving forward with a more comprehensive approach to offering early childhood education programs that will ensure that children are safe, healthy and school ready.

As part of the President’s *Good Start, Grow Smart* initiative, states were asked to report in their Child Care Development Fund (CCDF) 2003 Biennial State Plans on the progress they are making in the implementation of early learning guidelines, professional development of child care providers and coordination across early childhood programs. State plans report that significant progress has been made in building early childhood systems. All 32 states with developed or implemented guidelines included the competencies in the areas of language, literacy and numeracy, and 31 of those also addressed social and emotional development. States that have successfully developed and implemented early learning guidelines found that it took time to develop trust and good communication among partners, e.g., state departments of education, Head Start and pre-kindergarten programs, resource and referral agencies, child care providers, and parents. While *Good Start, Grow Smart* specifically addresses the development of language, pre-reading, and numeracy skills in three to five-year-olds, some states have developed early learning guidelines that address the range of developmental domains including social, emotional, cognitive, linguistic, and physical. Similarly, to ensure that efforts to improve the school readiness of three to five-year-olds do not have unintended negative consequences for younger children, some States have chosen to develop guidelines that span from birth to age five.

A. Some states are working to develop early childhood education systems.

- **National Association of State Boards of Education, Early Childhood Education Network**

With funding from the Foundation for Child Development, the National Association of State Boards of Education (NASBE) initiated an effort in March 2001 to help states increase their ability to create integrated, high quality early childhood education policies, and programs and services to support school achievement for children with and without disabilities.⁵⁸ The framework emphasizes quality standards to ensure readiness to learn, comprehensive and integrated early education services, a results-based orientation that involves data management systems, professional development, structures to increase access and equity, and funding approaches that maximize resources.

With foundation funding, the NASBE Early Childhood Education Network provided seed grants to six states. Though the grant amounts were small, they allowed states to move forward with plans for developing a comprehensive and integrated early childhood education system and to evaluate the results. For example,

- Wyoming worked to develop a data collection system to support systems building and to collect baseline data using a kindergarten readiness survey that will be used, in part, to configure the delivery of professional development in the state.
- Louisiana created an interagency group to develop a long-term vision for early childhood education.
- Kansas activities focused in part on developing a common definition of school readiness across agencies that administer early childhood programs, and developing and implementing a single set of standards and indicators for Head Start programs, child care, and services and programs provided under the Individuals with Disabilities Education Act (IDEA).⁵⁹
- Illinois formed a committee that included state education board members, representatives from Head Start, the Department of Child and Family Services, and the state Department of Health and Human Services. The committee worked together to determine how best to support and expand services for children with disabilities.
- Massachusetts assessed how preschool and child care initiatives interface with Parts B and C of IDEA⁶⁰. The state is working to broaden its vision of a comprehensive early childhood education system to include private daycare and other providers and to expand its concept of comprehensive infrastructure to include children with and without disabilities.
- Ohio conducted a hearing under the Commissioner of Education to highlight issues central to providing quality education and care services to children with and without disabilities.

The hearing will be the basis for an iterative process of formulating state policy and coordinating early childhood initiatives across programs, such as providing technical assistance and training to all Head Start, preschool, and child care providers who serve young children with special needs.

- **Trust for Early Education**

The Trust for Early Education (TEE) was founded in 2002 with a multi-million dollar grant from the Pew Charitable Trusts, which remains the primary sponsor.⁶¹ The goal of the TEE is to help every child, regardless of income or background, gain access to a high quality pre-kindergarten education. A primary focus of their efforts is supporting collaborations to develop comprehensive early childhood education systems. For example, TEE awarded a planning grant to the Wisconsin Department of Public Instruction (DPI) to support a partnership between DPI and the early childhood community. Wisconsin offers school districts the option of providing four-year-old kindergarten. Almost half of the school districts operate kindergartens with a growing number of districts interested in collaborating with child care and Head Start. Expanding collaborative approaches to preschool is a top priority. With the planning grant, the partnership will: (1) study the communities that have successful collaborative preschool programs; (2) share models with remaining school districts; and (3) build public support for expanding collaborative approaches.

As part of their broader work in early childhood, the Pew Charitable Trusts supports a network of nonprofit organizations in a small number of states in developing effective policies to create systems of early education.⁶² Funds go to states with a history of investment in early education, and leaders interested in working toward universal, voluntary early education.

- **Council of Chief State School Officers**

The Council of Chief State School Officers (CCSSO) has embarked on a set of actions under the Early Childhood and Family Education Initiative to improve coordination across early childhood programs, the quality of early childhood education, and access to pre-kindergarten. The Initiative stems from the Council's policy statement on early childhood and family education, which was adopted unanimously in 1999 and conveys the Council's commitment to ensuring that every child has the opportunity for high quality early care and education and to supporting school systems in each state in reaching high standards of performance and preparing each child to succeed as a productive member of a democratic society. The project is supported by a \$240,000 grant from the Pew Charitable Trusts and includes the following activities.

- The Building a Cadre of Champions project is designed to promote leadership for quality early childhood education among its member superintendents and commissioners. The CCSSO is enlisting a group of chief state school officers with strong records of support for early education to oversee and advise the project and to serve as national, regional, and state spokespersons for expanded quality and access to early childhood education.
- The CCSSO is developing a communications strategy that includes producing and disseminating evidence-based reports, research, and resources on early education through a variety of print and electronic media. The materials emphasize key issues affecting early

education, and profiles of effective state policies, practices, and individual efforts to link preschool with the K-12 system.

- The Early Childhood Education Assessment (ECEA) Consortium, initiated in 2000, works to give decision makers guidance on appropriate assessment systems to support high quality learning opportunities for young children. The consortium's focus is on early learning and developmental outcomes, appropriate assessment, program evaluation, and using data for system accountability. The consortium assists states in addressing issues related to the development of children from birth through age eight years, and delivers this information to educators, caregivers, policy makers, parents, and the general public. Participants include state assessment and early childhood staff, representatives from key early childhood education organizations, researchers, and expert consultants from the field.
 - The Mid-Atlantic Early Childhood Education Network is the result of collaboration between the CCSSO and the Temple University's Mid-Atlantic Laboratory for Student Success (LSS). The principal focus of this collaboration is to strengthen the capacity of state education agencies to foster state and local early childhood education-elementary school partnerships in the Mid-Atlantic region. The broader goal is to promote universal access to quality early childhood programs for all three and four-year-olds. The network supports five states in planning early learning systems and developing local partnerships that promote learning and increase the public's understanding of research evidence on the importance of quality early childhood education to children's school and life outcomes.
 - The CCSSO provides technical assistance to the School Readiness Indicators Initiative. This 17-state project spearheaded by Rhode Island Kids Count is developing state-based indicators of school readiness with funding from the David and Lucile Packard Foundation, the Ewing Marion Kauffman Foundation, and the Ford Foundation. State teams work individually and as a group to develop a comprehensive set of measures to monitor school readiness and service system outcomes for children and families. National meetings of states' team representatives provide support on developing indicators, resolving conceptual, data and technology issues, and developing communications strategies. Residency roundtables, which involve state leaders and field experts, are convened two to four times a year to focus on the most pressing conceptual challenges.
- **National Governors Association and the National Conference of State Legislatures**

The National Governors Association and the National Conference of State Legislatures provide ongoing support through a variety of activities to assist governors and legislators in building early childhood capacity. Projects and activities help build state capacity, provide technical assistance and build leadership.⁶³

B. Some states have comprehensive systems initiatives that target school readiness.

Some states are undertaking the development of comprehensive early childhood systems that focus on providing high quality early childhood education that links children to essential services needed to promote school readiness. During the past five years, there has been an increase in the number of states

developing initiatives to create early childhood systems that address children's educational, health, and family support needs, as opposed to developing targeted programs or services that focus on only one of these areas.⁶⁴

In developing these systems, states have recognized that developing the language and cognitive skills, social competencies, and physical and emotional health needed for school preparedness begins at birth. Instead of focusing exclusively on three- to four-year-olds, most of these approaches strive for integrated and comprehensive early education and service systems that begin at birth and continue at least through age five. In addition, states are using data from varied sources to inform the design and operation of their programs in order to best meet the needs of the children and families served and to evaluate the results of their efforts.

- **California⁶⁵**

In 1998, California passed the California Children and Families Act as a result of a statewide referendum known as Proposition 10. The initiative emphasizes the development of an integrated, comprehensive, and collaborative system of information and services for young children and their families. According to state statute, programs should emphasize community awareness, education, child care, social services, health care, and research. The California Children and Families Commission, called First 5 California, provides statewide leadership for the initiative. The Commission funds research projects and model programs, supports a public education campaign, and works with county-level commissions.

Revenues for funding the entire initiative, raised from tobacco taxes, totaled about \$690 million in FY 2000 and \$626 million in FY 2001; 80% of funds go to the county commissions to meet locally identified needs. On average, in FY 2001 local commissions distributed 15% of their funds, totaling \$26,694,394, to support systems change efforts that involve developing county-level capacity to provide integrated, effective, and consumer-oriented systems.

The Commission adopted school readiness as its overarching goal, with the signature project being a \$400 million school readiness initiative. The "Essential and Coordinated Elements" required for every School Readiness Program includes: early care and education with transition strategies, parenting and family support services including literacy and parenting skills, health and social services, and targeted school readiness activities that include early childhood and kindergarten standards and curriculum.

State statute requires an evaluation to determine the impact of the First 5 California Children and Families funds, including assessments of funds expended and progress toward achieving goals and objectives. Other data are used to design and implement the initiative. For example:

- Effectiveness studies are being conducted on funded products and programs, such as a Kit for New Parents, and programs to train and retain early care and education staff.

- A Geographic Information System maps risk factors, resources, and information at both the state and county levels. The information is used to identify complex relationships between community problems and available resources and to integrate information from different sources to produce a more holistic picture of the environments where California children live.
- The California Health Survey provides population-based state and local health data and is the largest state survey ever conducted in the U.S.
- The First 5 California Commission uses research to inform the development of their initiatives. For example, it commissioned research reviews to inform the development of home visitation programs that support school readiness and to identify promising programs and practices in early care, education, family, and community support.

- **Kentucky⁶⁶**

In 2000, legislation created and funded KIDS (Kentucky Invests in Developing Success) NOW, an early childhood initiative to address children's health, safety, and school readiness needs. KIDS NOW supports a range of maternal and child health, family support, and early care and education services. An Early Childhood Development Authority provides oversight and allocates funds to local community councils. A Business Council of local leaders promotes investments in early childhood and a Professional Development Council works to create an education and training system for early care and education providers. The strategy is to build on existing resources, foster public-private partnerships, ensure collaborative planning and implementation, and mobilize communities to implement this comprehensive services program. The initiative is funded with 25% of Kentucky's Phase 1 Tobacco Settlement dollars, which are expected to total \$56 million across two years. A team of researchers from the University of Kentucky and the University of Louisville are conducting an evaluation of KIDS NOW, though data are not yet available. The evaluation will include information about the characteristics of the children and families served, broad indicators of child and family experiences and outcomes, and details on the characteristics of centers in selected communities.

- **North Carolina**

North Carolina has implemented a variety of strategies to build an effective early care and education system for children from birth to the kindergarten entry.

Smart Start⁶⁷ is a public-private partnership that provides funding for comprehensive community-based early childhood education and services and supports collaboration at both the state and local levels. Smart Start began as a governor's initiative and was established in statute in 1993. Funding for Smart Start reached \$220 million in 2001, but was reduced to \$190 million in FY 2002-2003. More than \$200 million in private contributions has been raised since the program began. Smart Start funds are administered at the local level through local nonprofit organizations. The primary goal of Smart Start has been to ensure that all children enter school healthy and prepared to succeed.

The first round of awards were given to 12 partnerships (18 counties), and since 1997 all 100 counties in North Carolina have received Smart Start funds, either as a single-county partnership or as part of a multiple-county partnership. By legislative mandate, partnerships spend at least 70% of their funds on child care.

Non-experimental evaluations focusing on three and four-year-olds in Smart Start have been conducted by researchers at the Frank Porter Graham Child Development Center at the University of North Carolina at Chapel Hill.⁶⁸ Overall, findings for Smart Start show that the quality of center-based child care improved in centers that received Smart Start funding, and that children who attended better quality centers entered school with significantly better skills.⁶⁹ Specifically,

- Teacher ratings of school readiness for children from low-income families who attended Smart Start Centers were significantly higher than for children from low-income families who had attended other centers.
- Compared with children who had no previous child care experience, children who attended Smart Start Centers had higher teacher ratings of school readiness.
- Children who attended Smart Start Centers that had focused on making child care quality improvements, such as enhanced subsidies for higher child care quality, higher teacher education, license upgrades, on-site technical assistance, quality improvement, and facility grants, had higher teacher school readiness ratings than children who attended non-Smart Start programs.⁷⁰
- Direct assessments of children showed that children who attended Smart Start Centers had better cognitive and language skills. Teacher ratings of children's behavior showed fewer behavioral problems compared to children in centers that did not participate in Smart Start.

With funding from the Packard Foundation, Smart Start has established an office to provide technical assistance to other states that are showing extensive interest in designing similar initiatives.

North Carolina's **More at Four** pre-kindergarten program complements Smart Start by targeting at-risk four-year-olds and providing a high quality program of standards-driven, research-based educational pre-kindergarten. Each of the state's early childhood programs, including Head Start, child care, Smart Start, and More at Four, aims to link its funding, delivery systems and programming with the others to enhance cooperation and provide better services to children.

Researchers from the University of North Carolina-Chapel Hill are evaluating More at Four, though results are not yet available. To inform the More at Four initiative, the researchers completed a nationwide 2000-2001 survey of state-funded pre-kindergarten programs associated with public schools to learn more about public school involvement in the other states.⁷¹ Survey respondents, who were early childhood specialists in state departments of education, reported on the ages and numbers of children served, eligibility, administrative location, physical location in the community, state expenditures per child, and state pre-kindergarten program standards that

include program duration, teacher-child ratio, class size, teacher qualifications, curriculum and accreditation, and services offered.

- **South Carolina**

Modeled directly after North Carolina's Smart Start, South Carolina's First Steps to School Readiness (First Steps) program is a state-level public/private collaboration that creates local partnerships to assess local needs and engage in comprehensive strategic planning to ensure that all children enter first grade healthy and ready to succeed.⁷² The initiative was signed into law in June 1999 and is South Carolina's major state early childhood initiative. As a community-driven effort, county partnership boards include representatives from businesses, faith-based and nonprofit organizations, education, health services, and parents of young children. The partnerships focus on issues, such as early education, health care, quality child care and transportation. Through collaboration, the initiative can better target and intensify critically needed services, assure efficiency of available resources, and eliminate duplicated efforts. Donors, which include business and foundation communities, have to date given more than \$8 million.

Goals for First Steps, as stated in the enabling legislation, are to:

- give parents the support needed to strengthen families and support their children's development;
- increase comprehensive services to reduce children's risk for physical, developmental and learning problems;
- promote high quality preschool programs;
- provide services to ensure all children receive the protection, nutrition and health care needed to thrive and learn, and
- mobilize communities to enhance services for families and their young children that enable children to enter school healthy and ready to learn.

State statute mandates an external evaluation of the First Steps initiative.⁷³ Since the initiative is in the beginning stages, the first evaluation was designed to study the effectiveness of the implementation, with future studies to include information on child and family outcomes as the program matures. Primary goals of this first evaluation were to determine if First Steps had identified research-based best practices and implemented them effectively to serve the populations for which they were intended. The evaluation data revealed areas of strength and areas for improvement that the state will use to further develop First Step practices and procedures.

In addition to these states that are taking a comprehensive approach to building integrated early childhood systems, other states are taking incremental steps toward building early childhood systems. Examples of states include Massachusetts, Minnesota, Vermont, and West Virginia.⁷⁴

V. Conclusion

The goal of this report was to determine whether there is evidence that states can meet the challenge of providing high quality, comprehensive early childhood education and whether states would be sufficiently dedicated to this effort.

The evidence reviewed in this report shows that selected states are already major providers and funders of pre-kindergarten program. Though there is great variation across states, most state-funded pre-kindergarten programs meet widely accepted and research-based quality standards, offer key expanded services to meet children's health and nutrition needs, and involve parents in their children's education. Existing research on the results of state-funded pre-kindergarten programs has technical limitations that constrain what can be known about the impact of state efforts on children's outcomes. In addition, the studies were not designed to answer some critical questions, such as whether state-funded pre-kindergarten programs produce better outcomes than other programs serving similar populations or whether they reduce or eliminate achievement gaps. Taking into account these caveats, there is promising evidence that states can implement programs that produce positive outcomes in areas that include cognition, language, and academic achievement, with some positive outcomes, such as improved achievement test scores, reduced grade retention and school attendance, lasting into the elementary grades.

In addition, several states are funding large-scale initiatives to build early childhood systems that serve children from birth through age five. With the assistance of private foundations and state-level organizations, states are seeking and receiving some of the support needed to eliminate barriers to coordination and make even greater strides toward integrating pre-kindergarten, child care, Head Start and programs targeting specific services such as health, safety, and nutrition, into comprehensive early childhood systems. In developing their state-funded pre-kindergarten programs and early childhood systems, some states are using research, conducting research, and building data systems to evaluate their results, design and operate their programs, and make improvements in their approaches.

In conclusion, not all states may be qualified to undertake the administration of a coordinated and comprehensive early childhood education system that includes a strong evaluation component to measure results. However, the overall pattern of findings indicates that some states appear ready to meet this challenge.

Appendix A

Table 1 Notes

¹ Source: American Federation of Teachers, *At the Starting Line*, 2003.

Louisiana, Maine, Rhode Island, and Wisconsin recommend rather than require a 1:10 ratio. Georgia requirements apply to public providers. New Jersey requirements apply to the Abbott Preschool Program. North Carolina requirements apply to More at Four.

² Source: Education Week, *Quality Counts 2002*, with the exception of Alabama, Florida, Louisiana, Washington and Wisconsin for which data were missing. Information for these states was obtained from The Education Commission of the States, *State Funded Pre-k Profiles*. <http://www.ecs.org/clearinghouse/27/24/2724.htm>

³ Source: American Federation of Teachers, *At the Starting Line*, 2003.

⁴ Source: Education Week, *Quality Counts 2002*.

For the purpose of this report, programs were rated as providing expanded services if they offered at least two of the following: (1) meals, (2) health screening/referrals, and (3) family case-workers/home visits. Twenty-five (80%) of these states offered three of the services. Six states (19%) offered two of the services, with all but one providing meals and health screening/referrals.

⁵ Source: The Education Commission of the States, *State Funded Pre-k Profiles*.
<http://www.ecs.org/clearinghouse/27/24/2724.htm>

⁶ Source: American Federation of Teachers, *At the Starting Line*, 2003.

All states that have or are developing school readiness standards, with the exception of Colorado, Ohio and Virginia, have standards that cover language and early literacy, numeracy and early mathematics, early social and emotional competence, motor skills and physical abilities. Colorado has standards in the areas of language and early literacy, and numeracy and early mathematics, and Virginia is developing standards in these areas. Ohio either has or is developing standards in all of the areas except motor skills and physical abilities.

⁷ New Jersey's court-ordered Abbott Preschool Program meets the widely accepted maximum class size of 20; however, New Jersey's Early Childhood Program Aid (ECPA), with a maximum class size of 25, does not.

⁸ Florida requires a B.A. degree if the program is school-based or in the Migrant Prekindergarten program. Iowa's Shared Visions Preschool program requires a B.A. with ECE certification if the program is school-based. Massachusetts requires a B.A. if the program is school-based. Michigan requires a B.A. with ECE certification if the program is school-based. Minnesota requires a B.A. with ECE certification and/or Parenting Certification if the program is school-based. New Jersey requires a B.A. if the program is funded by the State Department of Education. Oregon, Vermont, and Virginia require a B.A. with ECE certification if the program is school-based.

⁹ Delaware has adopted Head Start Performance Standards.

¹⁰ North Carolina has school readiness standards for More at Four.

Endnotes

¹ *Strengthening Head Start, What the Evidence Shows*, U. S. Department of Health and Human Services, June 2003. <http://aspe.hhs.gov/hsp/StrengthenHeadStart03/index.htm>

² The American Federation of Teachers, *At the Starting Line*, 2003. State pre-kindergarten was defined broadly as providing funds for preschool programs that have early childhood education or school readiness as a goal.

³ *Quality Counts 2002*: Education Week, No. 17, January 10, 2002.

Different surveys show slightly higher or lower numbers of states offering pre-kindergarten depending on the criteria that were used to define state pre-kindergarten. For example, to be included in some surveys the state must have designed, implemented and funded its own pre-kindergarten program while other surveys, such as the one conducted by the American Federation of Teachers, included states that fund pre-kindergarten through supplements to programs not administered by the state, such as Head Start.

⁴ The number of states that give priority to low income children varies depending primarily on the definition of state-funded pre-kindergarten used in the survey. For example, The American Federation of Teachers publication, *At the Starting Line*, reports that 36 programs give priority to low income children, whereas *Education Week, Quality Counts 2002* reports that 26 states do.

⁵ *Quality Counts 2002*: Education Week, No. 17, January 10, 2002.

⁶ *Quality Counts 2002*: Education Week, No. 17, January 10, 2002.

⁷ Education Commission of the States, 2003 State of the State Addresses: Early Learning, February 2003 (updated March 17, 2003). Compiled by Gloria Zradicka. <http://www.ecs.org/clearinghouse/42/51/4251.htm>

⁸ *Quality Counts 2002*: Education Week, No. 17, January 10, 2002.

⁹ Education Commission of the States. *Pre-kindergarten Quick Facts*, 2003. <http://www.ecs.org/ecsmain.asp?page=/html/IssuesEL.asp>

¹⁰ National Center for Education Statistics, U.S. Department of Education. *Pre-kindergarten in U.S. Public Schools: 2000-2001. Statistical Analysis Report*, March 2003.

¹¹ This figure includes teachers in the 15% of pre-kindergarten classes that were devoted exclusively to special education. The survey does not give teacher education levels for teachers in general education classrooms or combined general education and special education classrooms.

¹² Data for class size include general education classrooms or classrooms that combine general and special education. Data for classes that provide only special education are not included. The survey did not report teacher-child ratios.

¹³ Research showing associations between children's development and characteristics of program quality such as class size, teacher-child ratio, teacher education and qualifications, and parent involvement is reviewed in a recent report: National Research Council (2001). *Eager to Learn: Educating Our Preschoolers* (Chapter 4, pp. 128-181). B. T. Bowman, M. Donovan, & M.S. Burns (Eds.), Board on Children, Youth, and Families, Commission on Behavioral and Social Sciences Education Washington, DC: National Academy Press. Additional information can be found in National Research Council and Institute of Medicine (2000). *From Neurons to Neighborhoods: The Science of Early Childhood Development* (Chapter 11, pp. 314-317). J. P. Shonkoff and D. A. Phillips (Eds.), Board on Children, Youth, and Families, Commission on Behavioral and Social Sciences and Education. Washington, D.C.: National Academy Press. The National Association for the Education of Young Children (NAEYC) and the Head Start Performance Standards require a class size with a maximum of 20 children and a teacher-child ratio of 1:10, which have become widely agreed upon standards. Research shows that smaller class sizes and

teacher-child ratios are associated with better child outcomes, but research has not documented that a particular class size or teacher-child ratio is critical.

Though some studies show better children's outcomes when parents are involved in their children's education, there is little evidence to show what type of parent involvement is best and which type is best for particular types of children and families.

The National Academy of Sciences conducted a review of research on teacher quality and children's outcomes for the 2000 report, *Eager to Learn: Educating Our Preschoolers*. The report recommends that early childhood teachers have bachelor's degrees. Whether or not the available data adequately support the report's conclusion and recommendations about the bachelor's degree has been debated since the report was published. Most studies on teacher qualifications measure the association between the amount of teacher education and teacher quality or child outcomes. The results show that more education and training is associated with high quality teaching behaviors and positive child outcomes in a range of areas that include language, cognitive, social, and emotional development. These findings hold across Head Start, center-based child care, and child care homes (and for parent care). The few studies that have categorized teacher education into levels and types show that children whose teachers have at least an AA in early childhood education have better outcomes than children whose teachers have a Child Development Associate credential or high school degree. Children whose teachers have at least a bachelor's degree attain the highest levels of competency. Some studies find that having a bachelor's degree in a child-related field is associated with greater teacher competency and more positive child outcomes, whereas other studies find that having a bachelor's degree regardless of the specialization is the better predictor of teachers' performance and children's verbal and cognitive skills.

Research on teacher qualifications and children's outcomes has not addressed threshold levels for teacher education and training at which point further improvements do not yield additional benefits for children. The incremental change in child outcomes associated with each advance in education and training (i.e., moving from a CDA to an AA or from an AA to a BA) has not been studied. Randomized experiments have not been conducted in which children were randomly assigned to classrooms with teachers who differed in education levels and very few have controlled statistically for family or program characteristics that could affect child outcomes, such as maternal education, and other characteristics of the program or setting, such as level of pay and program administration support for advanced degrees. Very few studies have examined changes in children's outcomes as their teachers acquire additional education and training across time.

The Child Development Associate (CDA) credential is awarded by the Council for Professional Recognition in Washington DC and funded by the Administration for Children, Youth, and Families in the U.S. Department of Health and Human Services to improve the quality of child care. This national credential program trains early care and education providers to promote children's physical, social, emotional and intellectual growth in a center-based, home visitor or family child care program, and to work with parents and other adults to meet children's needs in these areas.

¹⁴ Gilliam W. & Ripple, C. (in press). What can be learned from state-funded prekindergarten initiatives? A data-based approach to the Head Start devolution debate. In E. Zigler & S.J. Styfco (Eds.), *The Head Start debates (friendly and otherwise)*. New Haven, CT: Yale University Press.

¹⁵ Bryant, D. M., Burchinal, M., Law, L. B., & Sparling, J. J. (1994). Family and classroom correlates of Head Start children's developmental outcomes. *Early Childhood Research Quarterly*, 9, 289-309.

Burchinal, M. R., Cryer, D., Clifford, R. M., & Howes, C. (2002). Caregiver training and classroom quality. *Applied Developmental Science*, 6(1), 2-11.

Cassidy, D. J., Buell, M. J., Pugh-Hoese, S., & Russell, S. (1995). The effect of education on child care teachers' beliefs and classroom quality: Year one evaluation of the teach early childhood associate degree scholarship program. *Early Childhood Research Quarterly*, 10, 171-183.

Dunn, L. (1993). Proximal and distal features of day care quality and children's development. *Early Childhood Research Quarterly*, 8, 167-192.

Howes, C. (1997). Children's experiences in center-based child care as a function of teacher background and adult:child ratio. *Merrill-Palmer Quarterly*, 43, 404-425.

Kontos, S., Hsu, H.C., & Dunn, L. (1994). Children's cognitive and social competence in child care centers and family day care homes. *Journal of Applied Developmental Psychology*, 15, 87-111.

National Institute of Child Health and Human Development, Early Child Care Research Network (2000). Characteristics and quality of child care for toddlers and preschoolers. *Applied Developmental Science*, 4, 116-135.

Peisner-Feinberg, E. S., & Burchinal, M. R. (1997). Relations between preschool children's child care experiences and concurrent development: The Cost, Quality, and Outcomes Study. *Merrill-Palmer Quarterly*, 43, 451-477.

Peisner-Feinberg, E. S., Burchinal, M. R., Clifford, R. M., Culkin, M. L., Howes, C., Kagan, S. L., & Hazejian, N. (2001). The relation of preschool quality to children's cognitive and social developmental trajectories through second grade. *Child Development*, 72(5), 1534-1553.

Ruopp, R., Travers, J., Glantz, F. M., & Coelen, C. (1979). Children at the center: Summary findings and their implications. In *Final report of the National Day Care Study: Children at the center, Vol. 1*, Cambridge, MA: Abt Associates.

Whitebook, M., Howes, C., & Phillips, D. (1989). *Who cares? Child care teachers and the quality of care in America: Final report of the National Child Care Staffing Study*. Child Care Employee Project. Abt Associates.

¹⁶ Ripple, C. H., Gilliam, W. S., Zigler, E., & Chanana, N. (1996). Will fifty cooks spoil the broth? The debate over entrusting Head Start to the states. *American Psychologist*, 54, 327-343.

¹⁷ Gilliam & Ripple, in press.

¹⁸ The District of Columbia is referred to as a state in the survey and in this report.

This study identified fewer states as having pre-kindergarten programs, primarily because of the criteria that were used to define state pre-kindergarten. To be included in this study, the program: (a) must target or be accessible to children from low-income families, (b) provide at least some form of classroom-based, educational service directly to preschool-age children, (c) be implemented and administered at the state level (not state aid for low-income parents to purchase their own preschool services), (d) be primarily state-funded (not state supplementation to programs funded primarily at the federal or local level); and (e) not serve exclusively children with disability. Seven states (Alabama, Connecticut, Nevada, New Mexico, North Carolina, Pennsylvania, and Rhode Island) were not included in the survey but were included in the Education Week report, *Quality Counts 2000*, which used a broader definition of state-funded pre-kindergarten and documented 39 states and the District of Columbia as funding state pre-kindergarten.

¹⁹ U.S. Department of Health and Human Services, Head Start Bureau. *Head Start Program Information Report for the 2001-2002 Program Year, National Level Summary Report*.

²⁰ *Quality Counts 2002*: Education Week, No. 17, January 10, 2002.

²¹ American Federation of Teachers, *At the Starting Line*, 2003.

²² The Education Commission of the States, *State Funded Pre-k Profiles*. <http://www.ecs.org/clearinghouse/27/24/2724.htm>

²³ The Abecedarian Project was a carefully controlled study of an early childhood intervention that began in the 1970's. Fifty-seven infants from low-income families living in a small North Carolina town were randomly assigned to receive an intensive early intervention in a high quality child care setting and 54 were in a non-treated control group. Positive impacts were found on children's cognitive development, school achievement, and long-term educational attainment. The findings have been published in peer review journals and vetted for technical soundness. The Perry Preschool Study, which began in the 1960s, was one of the first to identify lasting effects of high quality preschool programs on children's outcomes. One hundred twenty-three poor African American 3- and 4-year-olds were randomly assigned either to attend a high quality preschool program or to no preschool. Both the Abecedarian Project and the Perry Preschool Study focused on specific approaches to offering early childhood education services: neither focused on state-funded pre-kindergarten.

For more information about the Abecedarian Project study methods and results, see:

Campbell, F. A., Ramey, C.T., Pungello, E. P., Sparling, J., & Miller-Johnson, S. (in press). Early childhood education: Young adult outcomes from the Abecedarian Project. *Applied Developmental Science*.

Campbell, F. A., Pungello, E. P., Miller-Johnson, S., Burchinal, M., & Ramey, C.T. (in press). The development of cognitive and academic abilities: Growth curves from an early childhood educational experiment. *Developmental Psychology*.

Ramey, C.T., Campbell, F. A., Burchinal, M., Skinner, M. L., Gardner, D.M., & Ramey, S. L. (2002). Persistent effects of early intervention on high-risk children and their mothers. *Applied Developmental Science*, 4, 2-14.

For more information about the Perry Preschool Study methods and results, see:

Schweinhart, L.J., Barnes, H. V., & Weikart, D. P. (1993). Significant benefits: The High/Scope Perry Preschool study through age 27. Monographs of the High/Scope Educational Research Foundation, 10. Ypsilanti, MI: High/Scope Press.

²⁴ Studies of the Chicago Child-Parent Centers do not include randomized designs.

²⁵ New Jersey Department of Education, Office of Early Childhood Education. *Abbott Preschool Program Implementation Guidelines*, February 2003. <http://www.state.nj.us/njded/ece/abbott/guidelines/guidelines.htm>

²⁶ New York State Education Department. *Universal PreKindergarten Takes Off in New York State, February 2000*. <http://www.emsc.nysed.gov/universe/prektakesoff/prelimfind.htm>

²⁷ Illinois Office of the Governor. *Ready, Set, Grow: A Framework for Universal Access to Quality Preschool in Illinois Created by the Governor's Task Force on Universal Access to Preschool*. http://www100.state.il.us/learning/preschool_access.cfm

²⁸ Gilliam, W. & Zigler, E. (2001). A critical meta-analysis of all evaluations of state-funded preschool from 1977 to 1998: Implications for policy, service delivery and program evaluation. *Early Childhood Research Quarterly*, 15; Gilliam & Ripple, in press.

²⁹ Since 1998, state-funded pre-kindergarten programs have evolved and may not reflect the current-day program. For example, the New York program included in the 10-state review, the New York State Experimental Prekindergarten Program (NYSEPP), is an older program implemented in 1966 and not New York's current universal pre-kindergarten program which was implemented in 1998 and which has not been formally evaluated.

³⁰ Gilliam & Zigler, 2001; Gilliam & Ripple, in press.

³¹ The term cohort refers to a group of children who entered and exited the program the same year.

³² Of the 10 studies, Gilliam and Zigler note that only two have been published in professional journals, which require a peer review process to evaluate technical soundness.

³³ Gilliam & Zigler, 2001.

³⁴ Gilliam & Zigler, 2001.

³⁵ Gilliam & Zigler, 2001.

³⁶ Gilliam & Zigler, 2001.

³⁷ Gilliam & Zigler, 2001.

³⁸ Gilliam & Zigler, 2001.

³⁹ Gilliam & Ripple, in press.

⁴⁰ Gilliam & Ripple, in press.

⁴¹ Private school is defined as schools or child care centers that offered educational and developmental programs for four-year-olds in exchange for tuition or fees.

⁴² Standardized assessments included measures of receptive vocabulary, expressive language skills, cognition and pre-mathematics, and letter and word recognition. Direct assessments used in other large-scale studies measured “basic skills” including children’s ability to recognize colors, recognize written numerals, and understand story and print concepts. (These tests do not have national norms.) Teachers rated children’s conversation, communication and expressive language skills as well as the appropriateness of children’s classroom behaviors, which were used as the measure of social and emotional development. Children’s health and physical well-being were assessed through teacher and parent surveys. (Teacher ratings and teacher and parent surveys also do not have national norms.)

⁴³ This method is superior to computing the amount of change in children’s scores between a pre-test prior to intervention and a single post-test following intervention for several technical reasons. For example, the technical requirements for this method of analysis, which includes that children’s abilities be measured at three or more time points, significantly reduce measurement error allowing stronger inferences to be made about the amount and direction of children’s progress. Process quality refers to interactions with teachers and peers, classroom activities, resources and materials, and instructional methods that children experience in the program.

⁴⁴ The Early Childhood Environment Rating Scale-Revised (ECERS-R) was used to measure classroom quality. Areas evaluated include: Space and Furnishings (e.g., room arrangement for play), Personal Care Routines (e.g., health and safety practices), Language-Reasoning (e.g., presence and use of books and pictures, encouraging children to use language), Activities (e.g., art, music, blocks, dramatic play, numbers), Interaction (discipline, peer interactions, sensitivity and responsiveness of staff-child interactions), Program Structure (e.g., free play, group time), and Parents and Staff (e.g., provisions for personal needs of staff, opportunities for professional growth). The measure was not designed to evaluate the range of specific activities and practices that have been shown in research to promote knowledge and skills in the areas of language, early literacy, early mathematics, and social and emotional competency.

⁴⁵ The failure to find an association between letter-word recognition and program quality is not surprising because although the program quality measure used in this study is technically sound and widely used, it does not have a focus on letter-word recognition or other pre-reading knowledge and skills. Program quality measures that include observations of teacher-child interactions and activities that promote pre-reading skills have not been sufficiently developed.

⁴⁶ Georgia’s pre-kindergarten program had significantly fewer black children and significantly more white children than Head Start. Compared to Head Start, Georgia’s pre-kindergarten program had fewer children whose mothers or fathers had less than a high school degree, fewer children receiving Medicaid or SCHIP as their primary insurance, fewer children whose families received welfare during the past five years, fewer children who were born to teenage mothers, fewer children who lived in a household with less than two adults and fewer children who had not lived continuously with both parents from birth, and fewer children whose families had received food stamps during the past five years. Average household income was significantly higher for Georgia pre-kindergarten than for Head Start (40,000-50,000 versus 20,000-30,000). Georgia pre-kindergarten had more children whose mothers had a bachelor’s degree, more children who were read to every day at home, and more parents participating in their children’s education. In addition, more children in Head Start were referred for language services. Children in Georgia’s pre-kindergarten program also began the pre-kindergarten program with scores above the national norm for letter-word recognition, whereas Head Start scored below national norms. Though children entering both programs scored below national norms on all vocabulary, expressive language, story comprehension and print familiarity, and problem-solving/pre-mathematics, children in Head Start had entering scores that were substantially lower than children in Georgia pre-kindergarten, as well as lower scores on a non-standardized assessment of basic skills mastery (color recognition, number recognition, and counting).

Though Georgia pre-kindergarten differed from private preschools on some characteristics, they were similar in most areas. Georgia’s pre-kindergarten program had significantly more black children and significantly fewer white children than private preschools. Compared to private preschools, Georgia’s pre-kindergarten program had the same percentages of children whose mothers or fathers had less than a high school degree, received Medicaid or SCHIP as their primary insurance, received welfare

during the past five years, children born to teenage mothers, children who have lived with both parents continuously since birth, and children whose families had received food stamps during the past five years. Compared to private preschool, Georgia pre-kindergarten had the same percentage of children whose mothers had a bachelor's degree, the same percentage of children who were read to every day at home, and the same percentage of children whose parents participated in their children's education. In addition, the same percentages of children were referred for language services in Georgia pre-kindergarten and private preschool.

Children in Georgia's pre-kindergarten program began the pre-kindergarten program with letter-word recognition scores that were lower than those for children in private preschool, though they were above the national norm. Children entering Georgia pre-kindergarten had vocabulary and expressive language scores that were significantly lower than children entering private preschools, though scores for both groups were below national norms. Children entering Georgia pre-kindergarten had problem-solving/pre-mathematics scores that were significantly lower than children entering private preschool, and below national norms. Scores for story comprehension and print familiarity were similar for children entering Georgia pre-kindergarten and public preschools. On non-standardized assessments of basic skills mastery (color recognition, number recognition, and counting) children entering Georgia pre-kindergarten scored significantly lower on number recognition and had similar scores for color recognition and counting, compared to children entering private preschools.

⁴⁷ Self-selection bias occurs because study participants with particular characteristics (such as extreme poverty) choose to belong to a specific group (such as Head Start) and those same characteristics also have a known or suspected effect on the outcome of interest (such as the effect of extreme poverty on children's development and school readiness).

⁴⁸ In the sub-study, a portion of the larger sample of children who attended Georgia pre-kindergarten was selected to obtain a group of children with characteristics similar to those who attended Georgia Head Start. The groups were matched to ensure that children in each group were similar on geographical location (rural, urban, other), sex and race. The technique also tries to account for other family risk factors using a "propensity score," which represents the probability that all of the children included in the sub-study have characteristics comparable to the children who enrolled in Georgia Head Start. More specifically, the propensity scores estimated the probability that all children in the sub-study belonged to one of four characteristic groups that tended to enroll in Head Start: 1) TANF eligible children whose primary caregiver generally had not completed high school, 2) low-income children eligible for food stamps and Medicaid whose primary caregiver generally had a high school education, 3) lower to middle-income children, and 4) children who had lived with both parents since birth and had parents whom teachers identified as participating in the classroom.

⁴⁹ The evaluation includes many comparisons between Georgia pre-kindergarten and Head Start. Most did not control for child and family differences that could account for program group differences. The sub-study used statistical controls for the influence of child and family characteristics on children's outcomes and focused on disadvantaged groups of children who attended Georgia pre-kindergarten and Head Start. Therefore, when comparing Georgia pre-kindergarten and Head Start, this report summarizes only those analyses that attempted to control for child and family differences between the two groups.

⁵⁰ See Gilliam & Zigler for a more detailed discussion of the technical limitations of state-funded pre-kindergarten program evaluations.

⁵¹ Bond, J. T. *Interim Report: The Evaluation of Connecticut's School-Readiness Program. Cohorts 1 & 2 through Spring 2002*. Prepared for the Connecticut Department of Social Services and Connecticut Department of Education.

⁵² *The School Readiness Initiative in South Central Connecticut: Classroom Quality, Teacher Training, and Service Provision, FY 2000 Update*. Report prepared by W. S. Gilliam, Yale University Child Study Center, January 2001.

⁵³ Bond, 2002

⁵⁴ The amount of change from fall to spring rose slightly, but did not reach the conventional level of statistical significance. This finding indicates that children were close to national norms when they entered pre-kindergarten, and that the pre-kindergarten program did not accelerate children's advancement beyond the typical rate of development. Effect sizes for the pre-test/post-test difference are not reported and cannot be computed from the data provided.

⁵⁵ The report does not show children's performance at the beginning and end of pre-kindergarten, as was done for school readiness. As a result, it is not known how close children were to national norms before entering the program and the amount of progress children made during the pre-kindergarten year.

⁵⁶ *Investing in Better Outcomes: The Delaware Early Childhood Longitudinal Study*. University of Delaware Center for Disability Studies, April 2002.

Henry, G. T. Gordon, G. S., Mashburn, A., & Ponder, B. D. (2001). *Pre-K Longitudinal Study: Findings from the 1999-2000 School Year*. Report prepared by the Applied Research Center, Andrew Young School of Policy Studies, Georgia State University for the Georgia Office of School Readiness.

Opfer, V. D., Brackett, M. H. H., & Henry, G. T. (1999). *Impact of Georgia's Pre-K Program on Kindergarten through Third Grade*. Prepared for the Council for School Performance.

Maryland State Department of Education (March 2003). *Children Entering School Ready to Learn: School Readiness Information. School Year 2002-2003 by State and County*.

Illinois State Board of Education Research Division (June 2001). *Illinois Prekindergarten program for children at risk of academic failure. FY 2000 Evaluation Report*.

⁵⁷ Center for Law and Social Policy (CLASP). *State Initiatives to Promote Early Learning: Next Steps in Coordinating Subsidized Child Care, Head Start, and State Pre-kindergarten*. Policy brief, April 2001.

⁵⁸ National Association of State Boards of Education, Early Childhood Education Network. *Creating a Unified, Comprehensive System of Early Childhood Education*, 2003.

⁵⁹ IDEA is a federal formula grant program that assists states in providing a free and appropriate public education for children with disabilities in the least restrictive environment possible.

⁶⁰ Part B of IDEA assists states in providing a free and appropriate public education for individuals with disabilities from age 3 through 21. Part C supports early intervention services for infants and toddlers with disabilities from birth through age two and their families.

⁶¹ Trust for Early Education website, <http://www.trustforearlyed.org/>

⁶² Pew Charitable Trusts. *Starting Early Starting Strong (2001)*.
<http://www.pewtrusts.com/ideas/index.cfm?page=20&name=Strategies&issue=26>

⁶³ National Governors Association Website, <http://www.nga.org/>
National Conference of State Legislatures, <http://www.ncsl.org>

⁶⁴ National Center for Children in Poverty. *Map and Track 2000: State Initiatives for Young Children and Families*. Mailman School of Public Health, Columbia University. http://www.nccp.org/pub_mat00.html

⁶⁵ California Children & Families Commission. First 5 California. *Annual Report, Fiscal Year 2001/02*.

⁶⁶ Kentucky Governor's Office of Early Child Development, KIDS (Kentucky Invests in Developing Success) NOW
<http://gov.state.ky.us/ecd/index.htm>

⁶⁷ Smart Start <http://www.smartstart-nc.org/overview/main.htm>

⁶⁸ *Smart Start and Preschool Child Care Quality in NC: Change Over Time and Relation to Children's Readiness, March 2003*. A report by the Frank Porter Graham Child Development Institute Smart Start Evaluation Team: University of North Carolina-Chapel Hill.

⁶⁹ The study design was quasi-experimental and involved pre-post assessments with control groups. Because the studies were not randomized experiments, changes in child outcomes cannot be attributed unequivocally to Smart Start. Researchers have had difficulty conducting randomized trials because a randomized design is viewed as antithetical to the state's mission of providing essential services to all children in the state who need them. There is uncertainty about whether or not control group children had attended child care centers that offered some Smart Start services. In addition, length of participation varied greatly in the Smart Start group, ranging from 8 to 60 months, limiting conclusions about how much participation is needed to realize benefits. Data are not available on the duration and intensity of services needed to achieve benefits or which combination of services may contribute to positive effects and for which children.

⁷⁰ These findings are sometimes misinterpreted as showing that improvements in child outcomes are the direct result of quality improvement activities. However, the results cannot address this issue because Smart Start programs that focused on quality improvement were not directly compared to those that did not.

⁷¹ *North Carolina's Early Care and Education System: Report to the North Carolina General Assembly*, January 2003. <http://www.governor.state.nc.us/Office/Education/legislativereport-January2003.pdf>

⁷² South Carolina Office of Early Childhood Education, <http://www.sde.state.sc.us/offices/ece/>

⁷³ *First Steps and Further Steps: Early Outcomes and Lessons Learned from South Carolina's School Readiness Initiative, 1999-2002 Program Evaluation Report*. Prepared by Child Trends, Inc.

⁷⁴ National Center for Children in Poverty. *Map and Track 2000: State Initiatives for Young Children and Families*. Mailman School of Public Health, Columbia University. http://www.nccp.org/pub_mat00.html

The Office of the Assistant Secretary for Planning and Evaluation of the U.S. Department of Health and Human Services prepared this report.



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EFF-089 (3/2000)